REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 4-6 and 10-16 are presently pending in this application, Claims 1 and 16 having been amended by the present amendment.

In the outstanding Office Action, the specification was objected to, as failing to provide an adequate written description and an enabling disclosure; Claims 1, 4-6 and 10-16 were rejected under 35 U.S.C. §101, as containing subject matters rendered inoperative and lacking utility; Claims 1, 4-6 and 10-16 were rejected under 35 U.S.C. §112, first paragraph, as containing subject matter lacking adequate written description and not enabling to one skilled in the relevant art; Claims 1, 4-6 and 10-16 were rejected under 35 U.S.C. §112, second paragraph, for being indefinite; Claims 1, 4-6 and 10-16 were rejected under 35 U.S.C. §102(b) as being anticipated by Iwamura et al. (*Detection of Anomalous elements, x-rays, and excess heat induced by continuous diffusion of deuterium through multilayer cathode (Pd/CaO/Pd)*); Claims 1, 4-6 and 10-16 were rejected under 35 U.S.C. §102(a) as being anticipated by JP 2000-042388 (hereinafter "JP '388"); and Claims 1, 4-6 and 10-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over JP '388 in combination with JP 2000-258573 (hereinafter "JP '573").

First, with regard to the rejections under 35 U.S.C. §101 and §112, first paragraph, MPEP §2107.02 states as follows:

> "[T]he applicant does not have to provide evidence sufficient to establish that an asserted utility is true "beyond reasonable doubt." *In re Irons,* 340 F.2d 974, 978, 144 USPQ 351, 354 (CCPA 1965). Nor must an applicant provide evidence such that it establishes an asserted utility as a matter of statistical certainty. *Nelson v. Bowler,* 626 F.2d 853, 856-57, 206 USPQ 881, 883-84 (CCPA 1980) .... Instead, *evidence will be sufficient if, considered as a whole, it leads a person of ordinary skill in the art to conclude that the asserted utility is more likely than not true.*" (emphasis added in italic)

MPEP §2107.02 also states as follows:

> "Where an applicant has specifically asserted that an invention has a particular utility, that assertion cannot simply be dismissed by Office personnel as being "wrong," even when there may be reason to believe that the assertion is not entirely accurate. Rather, Office personnel must determine if the assertion of utility is credible (i.e., whether the assertion of utility is believable to a person of ordinary skill in the art based on the totality of evidence and reasoning provided). An assertion is credible unless (A) the logic underlying the assertion is seriously flawed, or (B) the facts upon which the assertion is based are inconsistent with the logic underlying the assertion."

In the previous Response, Applicants submitted Exhibits A-C to show the assertion of utility, i.e., operability, of the claimed devices. However, in the outstanding Office Action, the rejections under 35 U.S.C. §101 and §112, first paragraph, were maintained simply by stating that "the present inventors contributed to all of the exhibits" and that "[i]f reproducibility only occurs in one's own lab, errors (such as systematic errors) would be suspect." On the contrary, along with Exhibit A published by the present inventors, Applicants have submitted Exhibit B showing the study conducted and authored by two other researchers and Exhibit C showing the replication study conducted and authored by three university researchers at Osaka University together with only one of the inventors. Accordingly, it is respectfully submitted that the reproducibility did not occur only in "one's own lab," and that Applicants' assertion of utility cannot be dismissed without any "logic underlying the assertion is seriously flawed" or "facts upon which the assertion is based are inconsistent with the logic underlying the assertion" or simply because the Examiner only suspects "systematic errors" based on the co-authorships in the studies of Exhibits A-C. Applicants therefore respectfully request that the rejections under 35 U.S.C. §101 and §112, first paragraph, be withdrawn.

Regarding the rejection under 35 U.S.C. §112, second paragraph, Applicants respectfully traverse the rejections as follows. With regard to Claim 1, the Office Action asserts that "[t]he omitted element is: a heater ... requires to initiate the alleged transmutation reaction" and that "[w]ithout said heater the alleged reaction never takes place." Nevertheless, nowhere does Applicants' specification state that such a heater is required or essential. Instead, Applicants' specification on page 18 simply provides an exemplary embodiment of the nuclide transmutation device according to the present invention. Furthermore, the Office Action asserts that "claim 5 should be incorporated into claim 1" because "the transmutation material in question is not actively claimed." However, Claim 5 simply specifies, i.e., further details, the structure of the transmutation material binding device, thus it is believed that Claim 1 as it is structurally defines the metes and bounds of the transmutation material binding device, and the transmutation material itself is not required to be "actively claimed." With regard to the terms "high pressurization device" and "low pressurization device" recited in Claims 1 and 16, it is clear from each claim that high pressurization device produces a pressure in the absorption part higher than the pressure of the desorption part reduced by the low pressurization device. Therefore, these terms are not believed to be indefinite. Also, the amendments to Claims 1 and 16 are believed to be clearly supported by the original disclosure of the present application.[1]

Briefly, Claim 1 as currently amended is directed to a nuclide transmutation device including a structure body including a hydrogen absorbing metal or a hydrogen absorbing alloy, an absorption part in which one surface of the structure body is exposed to a deuterium gas at a pressure, a desorption part in which another surface of the structure body is exposed to the deuterium gas at a pressure lower than the pressure in the absorption part, the desorption part and the absorption part being positioned to form a closed space sealed by the

[1] For example, Specification, page 4, line 19 to page 5, line 16.

structure body, a high pressurization device configured to produce the pressure in the absorption part, the high pressurization device including a deuterium supply device configured to supply the deuterium gas to the absorbing part, a low pressurization device configured to reduce the pressure in the desorption part, the low pressurization device including an exhaust gas device configured to evacuate the desportion part, and a transmutation material binding device configured to bind a material that undergoes nuclide transmutation on the one surface of the structure body. By providing such a high pressurization device and a low pressurization device, the structure body readily absorbs the deuterium gas and produces effective nuclide transmutation between the deuterium gas and the material provided on its surface.

The outstanding Office Action asserts that Iwamura et al. sets forth an apparatus inherently capable of meeting applicants' claimed inventive concept. However, Iwamura et al. is not believed to teach "a high pressurization device configured to produce the pressure in said absorption part, said high pressurization device including a deuterium supply device configured to supply the deuterium gas to said absorbing part" as recited in amended Claim 1. Specifically, deuterium in the Iwamura et al. device simply diffuses in the electrolytic solution and passes through the Pd sample, instead of being supplied by a high pressurization device which allows more effective reaction. Therefore, the structure recited in amended Claim 1 is believed to be clearly distinguishable from Iwamura et al.

JP '388 discloses a hydrogen purifying device, and JP '573 discloses a device for in-solid nuclear reaction. Nevertheless, JP '388 and JP '573 do not teach "a high pressurization device configured to produce the pressure in said absorption part, said high pressurization device including a deuterium supply device configured to supply the deuterium gas to said absorbing part" as recited in amended Claim 1. More specifically, JP '388 simply discloses a device for purifying hydrogen by using a multi-layered membrane, and JP '573 merely

discloses the device for nuclear reaction including the electrolysis cell 11 in which deuterium is generated by electrolysis.[2] Therefore, the structure recited in Claim 1 is believed to be clearly distinguishable from JP '388 and JP '573.

Because none of Iwamura et al., JP '388 and JP '573 discloses the high pressurization device as recited in amended Claim 1, even the combined teachings of these cited references are not believed to render the structure recited in Claim 1 obvious.

Similarly, independent Claim 16 is believed to include subject matter substantially similar to what is recited in Claim 1 to the extent discussed above. Thus, Claim 16 is also believed to be distinguishable from Iwamura et al., JP '388 and JP '573.

For the foregoing reasons, Claims 1 and 16 are believed to be allowable. Furthermore, since Claims 4-6 and 10-15 ultimately depend from Claim 1, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 4-6 and 10-15 are believed to be allowable as well.

Lastly, Applicants respectfully request acknowledgement of two IDS references, DE19649511 (AO) and DE4009604 (AP), as listed on the PTO 1449 form filed on March 29, 2004. English language abstracts of these references are submitted herewith.

[2] JP '573, Fig. 1.

In view of the amendments and discussions presented above, Applicants respectfully submit that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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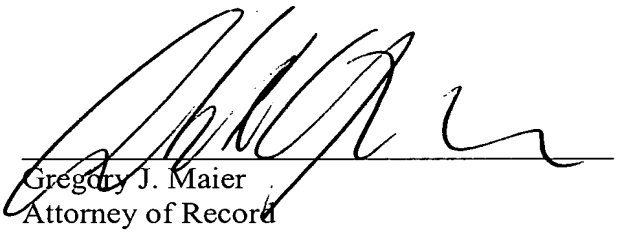

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